

(12) UK Patent Application (19) GB (11) 2 189 741 (13) A

(43) Application published 4 Nov 1987

(21) Application No 8606460

(22) Date of filing 15 Mar 1986

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(51) INT CL⁴

G06K 17/00 5/00

(52) Domestic classification (Edition I)

B6A C11 C81 C91 K
G4H 13D 14A 14B 14D 1A TG
U1S 2271 B6A G4H

(56) Documents cited

EP 0174016 WO 86/03040
US 4529870 WO 82/03286

(58) Field of search

B6A
G4H

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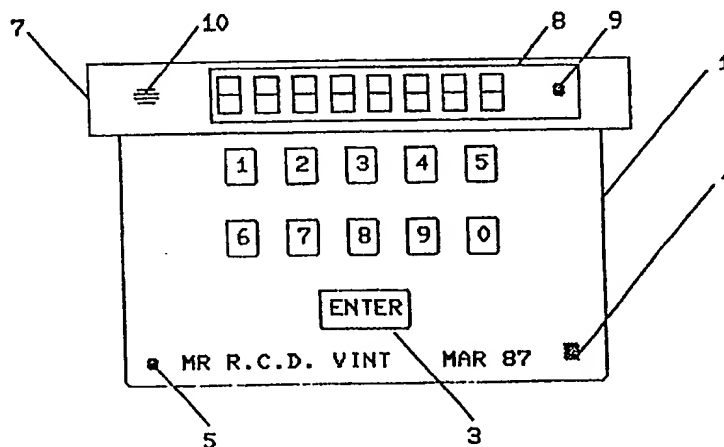
(54) Security cards

(57) A security (e.g. bank) card includes an input keyboard and a code verifying processor (4) whereby the validity of a code input through the keyboard may be verified, the resulting verification signal being communicable to a separable display attachment 7.

The display attachment may incorporate a slot for receiving an edge of the card. The matter may be displayed on a numeric output panel 8, and may be accompanied by audible annunciation from annunciator 10. The card may also bear a lamp 5 which lights up when a code is verified.

As described, in one embodiment power for the card processor is furnished by the attachment 7 (which has a battery status indicator 9).

Fig 1 SECURE BANK CARD

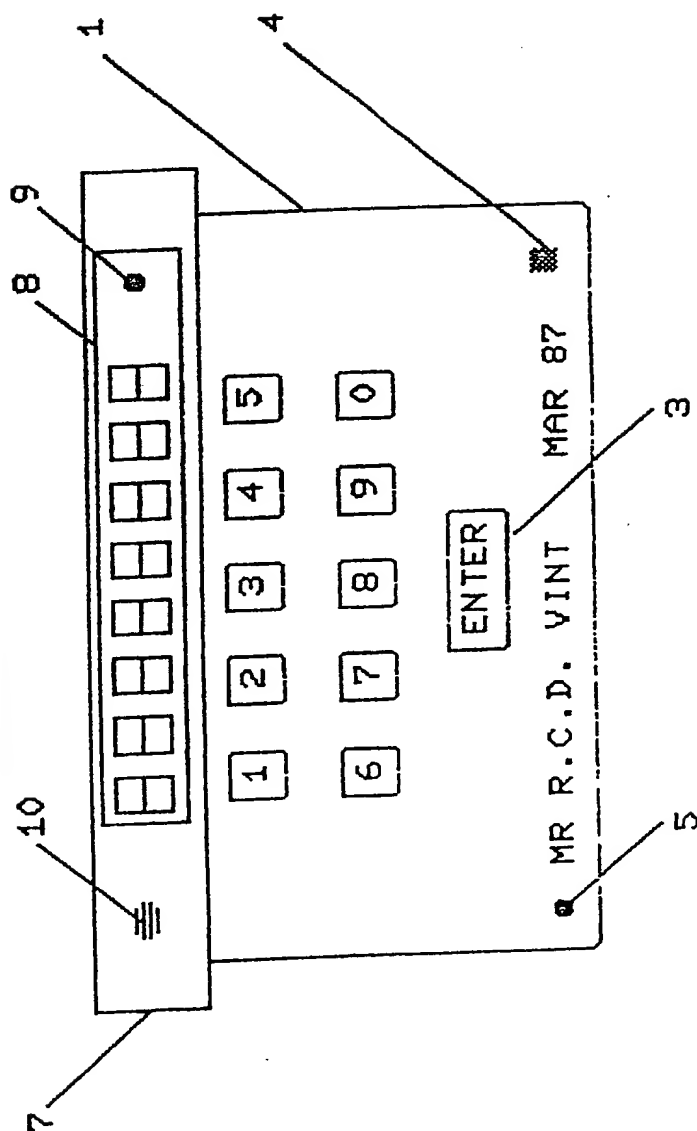


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Fig 1 SECURE BANK CARD

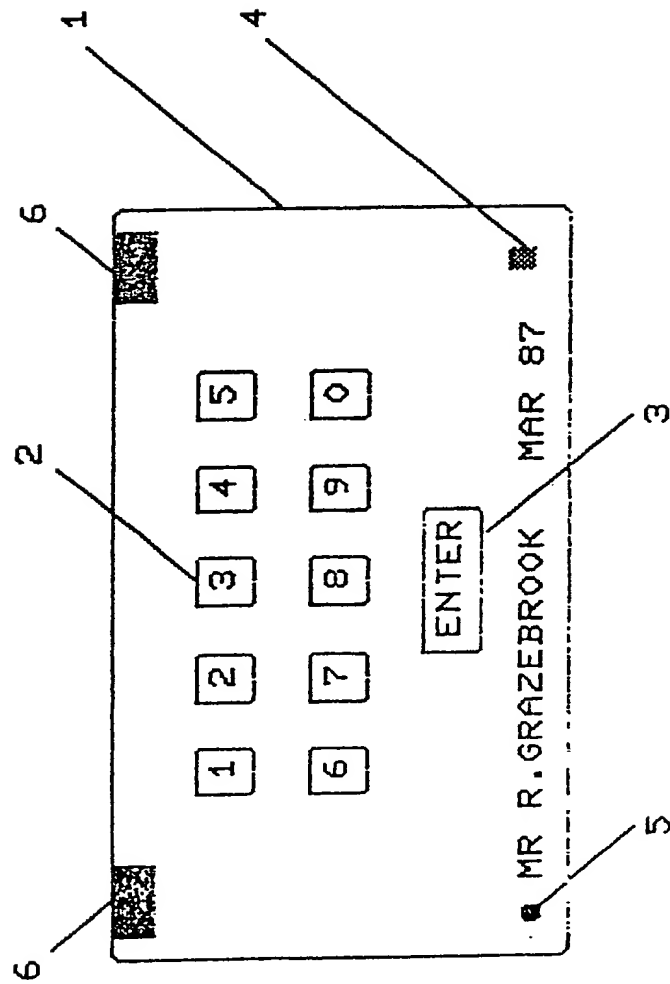


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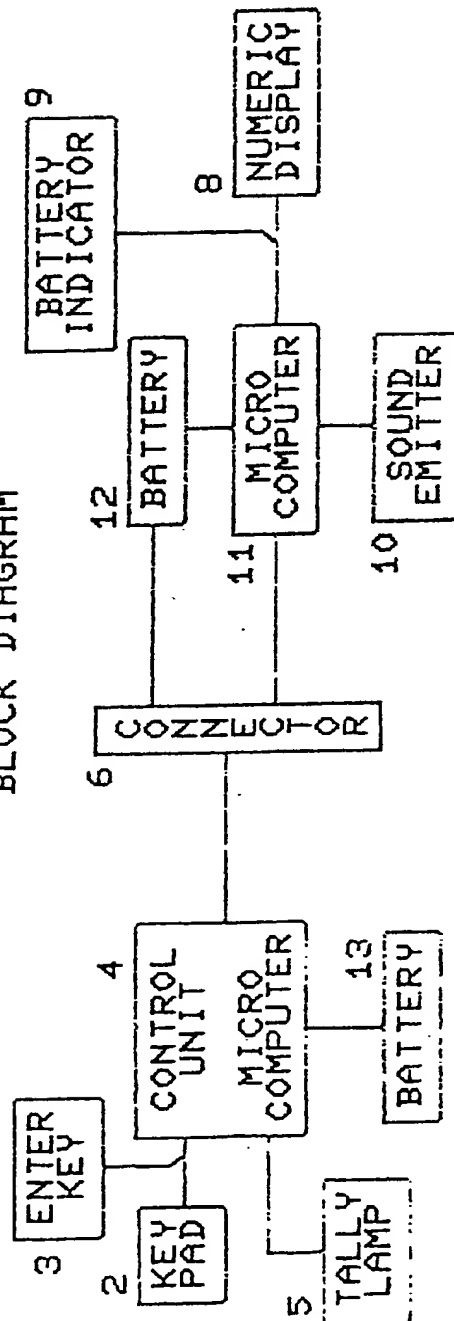
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Fig 2 SECURE BANK CARD



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Fig 3 SECURE BANK CARD
BLOCK DIAGRAM



SPECIFICATION

Credit card with demountable symbol display

5 The present invention concerns means for eliminating bank cheque/credit card frauds.
Some bank cheque cards additionally have the facility of being usable in cash dispensing windows so it is necessary to provide a universal means which will not effect the size or shape of existing type cards.

10 An object of the present invention is to provide an attachment for use with existing shape/size cards which will provide an identification means and thereby prevent an unauthorized user from obtaining funds from the holder's account.

According to the present invention a bank card is provided with an electronic circuit and keyboard which is adapted to operate an attachment having a display. Preferably the attachment comprises a liquid crystal display powered by solar energy or batteries incorporated therein and is in the form of a bar having a longitudinal groove adapted to receive one edge of the card, a circuit being formed when the card and the attachment are united.

25 In practice, a card owner can insert his own personal code into the card whereafter it remains unchanged. When it is desired to use the attachment, the card owner presses the required key board combination and this will then appear on the display. Advantageously, an audible sound is emitted when the correct number is entered. If the incorrect code is inserted, no symbols will appear on the display and if five successive incorrect codes are inserted the circuit will self destruct.

35 It will be noted that the display is of particular importance when the card is offered in small retail establishments, restaurants etc. which do not have electronic readers or sophisticated devices for readily checking fraudulent users.

40 The invention will now be described further, by way of example, with reference to the accompanying drawings, in which:-

Figure 1 is a front view of a display device attached to a card;

45 *Figure 2* is a view of the card only; and

Figure 3 is a block diagram of the electronic assembly.

A card 1 fits into a slot in a display attachment 7 comprising a number display 8, a battery status indicator 9 and an audible sound emitter 10. The card 1 has an array of touch sensitive keys 2 for entering a personal identity number, an ENTER key 3 and a visual indicator 5 to show that the number is correctly entered. The controlling means in the form of an integrated circuit 4 is connected to the contacts 6 and keys 2 and 5 through a printed circuit embedded in the card. Power is supplied to the card from the attached device through the contacts 6 of which two are shown in *Figure 1*. These contacts mate with corresponding contacts in the display attachment 7. Additional contacts may be required for signals between the parts, however two contacts are sufficient if multiplexing techniques are used. Advantageously, the contact surface materials are made from noble metals or conducting plastics to

reduce corrosion.

The block diagram of the electrical components of the bank card is shown in *Figure 3*. Lines on the drawing show signalling paths which will be represented in the connecting circuit by a plurality of separate wires. On receiving the card from the bank, the owner will plug the card into the display part joining the connections 6. The microcomputer 4 will start to function the key board 2 and enter key 3 will become sensitised. A microcomputer 11 in the display attachment, will present, on display 8, a prompt to the owner to think of a personal identity number (PIN) which he will enter on keys 2. When it is complete, he will press the enter key. Then display 8 will show the card number which was implanted in the microcomputer 4 by the bank. The owner may check the display contents with the number given to him by the bank in readable form. After this sequence, the PIN will be held in the microcomputer 11. The programs in the computers are arranged such that a repeat of the PIN entry sequence with the original PIN will cause temporary display of the card number and an audible sound from emitter 10. An incorrect PIN will not cause any sound to be emitted or number to be displayed.

Conveniently, a preset number of incorrect PINS will cause both parts to cease functioning permanently. Advantageously, a tally lamp 5 on the card will light next to the owners name when the correct PIN is entered. This will indicate that the operation of the units was correct. All signals sent through connections 6 should be encrypted against encryption key numbers held within both computers 4 and 11. This would greatly impede fraudulent copying of the bank card. A battery level indicator 9 being part of the display will show when the card needs to be renewed or the battery replaced.

In use the card may be validated with the bar attachment on the card without the need of card readers or other devices at the point of sale, or the bar may be detached from the card so that the card can be inserted into a cash dispenser or other card reading device, whether these be designed to read, as at present magnetic strips on a face of the card, or as may be in the future to read information stored within the electronic circuitry of the card.

CLAIMS

- 115 1. A bank/credit card comprising an electronic circuit and keyboard which is adapted to operate an attachment having a display.
2. A bank/credit card as claimed in claim 1, in which the attachment comprises a liquid crystal display.
- 120 3. A bank/credit card as claimed in claim 2, in which the liquid crystal display is powered by solar energy.
4. A bank/credit card as claimed in claim 2, in which the liquid crystal display is powered by batteries incorporated therein.
- 125 5. A bank/credit card as claimed in claim 1, 2, 3 or 4, in which the attachment is in the form of a bar having a longitudinal groove adapted to receive one edge of the card.
- 130

6. A bank/credit card as claimed in claim 5, in which a circuit is completed when the card and attachment are united.

7. A bank/credit card as claimed in claim 6, in which the circuit includes an audible sound emitter.

8. A bank/credit card as claimed in claim 6 or 7, in which the circuit includes a self destruct unit.

9. A bank/credit card comprising an attachment constructed and arranged to operate substantially as herein described with reference to and as illustrated in the accompanying drawings.

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